SAN MATEO CREEK PROJECT
STATE COASTAL CONSERVANCY

Conservation Strategy and Plan
For Southern Steelhead Restoration in San Mateo Creek Watershed

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INTRODUCTION

This Conservation Strategy and Plan (CSP) details the San Mateo Creek Project (SMC) goals and objectives for the restoration of Southern Steelhead trout (SST), *Oncorhynchus mykiss*, in the San Mateo Creek drainage. The CSP is the first effort to describe goals, objectives, and implementation actions for restoring SST and other native fish populations in the San Mateo Creek watershed. The CSP is the major accomplish of the 2006 work season of the SMC Project, funded by the State Coastal Conservancy (SCC), and represents a collaborative effort between the SMC Project Grantee, Trout Unlimited, the SCC, and other project partners including California Department of Fish and Game, Pendleton Marine Base (Camp Pendleton or Base) natural resources staff, NOAA Fisheries, San Diego Trout, State Parks, U.S. Forest Service, Cleveland National Forest, and U.S. Fish and Wildlife Service.

The CSP describes interagency strategies and work actions necessary to provide for a sustainable population of SST within the mainstem of San Mateo Creek, in the Cleveland National Forest (CNF), and in tributaries from Tenaja Falls to Camp Pendleton. The CSP addresses two major limiting factors to the recovery, restoration, and maintenance of this native salmonid species: (1) presence of exotic (non-native) species which pose a threat and risk to SST recovery; and, (2) existing and future basin land and water management actions, including irrigation practices, groundwater pumping, and road-sediment related issues. The CSP also emphasizes the continued need for interagency coordination and cooperation that will increase the effectiveness and efficiency of the multi-stakeholder and agency Technical Advisory Committee (TAC) created during the SMC Project. This strategy will better ensure solid technical input to the restoration work and serve as the primary outlet to secure constructive local community and stakeholder involvement. A final strategy is to conduct further monitoring related to exotic species management. Each strategy is described in further detail below along with corresponding tasks/actions.

The CSP's purpose is to create a central document for the subsequent coordination and implementation of conservation measures for the SST within its historic range in San Mateo Creek. The CSP covers a five year period, 2007 – 2011. However, the SMC Project will facilitate an annual review of the CSP by the TAC so that the plan reflects up-to-date information and actions.

The CSP begins with a description of the overall watershed characteristics and conditions and background of the SMC Project. After the background and history, the CSP defines the project problem statement and issues of concern. The CSP then identifies strategies responsive to the problems. The CSP provides implementation tasks and actions to achieve strategies and objectives. The CSP includes a detailed task and action schedule.

1. BACKGROUND AND HISTORY

San Mateo Creek rises in the Cleveland National Forest and the Santa Ana Mountains, flows in a southwesterly direction to the Pacific Ocean just south of San Clemente, in southern California. The San Mateo Creek watershed is approximately 139 square miles in size. Much of the lower reach flows through the Camp Pendleton Marine Corps Base (Base). More than 90% of the watershed is publicly-owned as part of the CNF or the Base.

Approximately six to seven stream miles are accessible to steelhead in the mainstem and tributaries. The high cliffs of Tenaja Falls on the mainstem of the creek are the barrier to the upstream extent of historic and potential steelhead migration. The primary tributary to the mainstem is Devil Canyon Creek. A substantial number of private land in-holdings exist within the upper watershed in the Cleveland National Forest. Christianitos Creek, which enters the lower portion of the San Mateo, drains an area north of the Base that is private, although presently lightly developed. The creek enters the Pacific in San Onofre State Park, which the State Parks manage under a lease with Camp Pendleton. The last three miles of San Mateo Creek are in the park. An extension of the Orange County Toll Road system is proposed for this area, and a portion of the area may be developed as part of the Mission Viejo Ranch plan.

San Mateo Creek is one of the last undammed rivers in southern California. San Mateo Creek, however, is often dry during July to October and the frequency of low flows is high. Tributaries to the creek are intermittent. The immediate San Mateo Creek Project activities will take place in the Cleveland National Forest portion of the watershed.

San Mateo Creek was at one time an important steelhead-producing stream in San Diego County, supporting significant local sport fisheries of both juveniles and adults. By 1991 researchers classified the San Mateo Creek steelhead population as extinct. But on February 11, 1999, a student from Saddleback College reported catching and releasing a steelhead/rainbow trout from San Mateo Creek in the reach immediately upstream of Interstate 5. Subsequent studies of individual fish by the California Department of Fish and Game (DFG) and National Marine Fisheries Service (NOAA or NMFS) have confirmed that they were anadromous steelhead. Numerous sightings of a small population of these fish have been made since (Hovey 2004, CDFG 2000a, NMFS 1997, 2001).

These sightings and findings bolstered a movement by advocacy groups to promote the protection and restoration of the habitat for native fish in the San Mateo Creek watershed, which ultimately became the San Mateo Creek Restoration Project. As mentioned above, in the spring of 1999, steelhead were publicly “rediscovered” in San Mateo Creek. With this finding came a wave of enthusiasm for steelhead restoration efforts in San Mateo Creek, and to bring back consistent runs of the southern California steelhead ESU throughout its range. NMFS is currently initiating recovery planning for the southern California steelhead ESU (NMFS 1997, 2001). With the passage of Proposition 12 in 2000, funds were allocated for efforts to restore native fish including arroyo chub, partially armored stickleback, and southern steelhead in their native creeks including San Mateo Creek, and its tributaries Devil Canyon Creek and San Onofre Creek.

In September 2002, the State Coastal Conservancy made an initial grant to begin planning for needed restoration activities. In April 2003, the Conservancy made an additional grant to ensure completion of a habitat assessment and evaluation of exotic species removal techniques. In spring of 2003, ECORP Consulting, Inc. (ECORP) was awarded a contract from Trout Unlimited and the State Coastal Conservancy to begin scientific studies necessary to develop a long-term plan to restore native fish (including steelhead) in the San Mateo Creek watershed. Several studies were undertaken to evaluate habitat and biotic resources in the creek and riparian zone of San Mateo Creek and to determine distribution and density of exotic species in the creek. This contract did not result in a long-term plan for the project.

In the summer of 2003, ECORP Inc. was awarded a contract to map the suitable habitat and conduct extensive exotic removal technique evaluation along a stretch of CNF in the upper portion of San Mateo Creek. The proposed area had been previously NEPA-approved for exotic removal and it was believed that this 2.5-mile stream reach would be suitable for such a control approach. CDFG biologists conducted exotic removal from the three base pools just above the gauging station in July 2004. At that time, these pools were at extremely low flow levels and effective removal was conducted at all three sites. The initial assessment work and this preliminary period of the project resulted in the production of several reports between 2002 and 2004. These include:

A) Evaluation of Exotic Species Removal Techniques, Fall 2003, dated: August 19, 2004; prepared by ECORP Consulting, 31 pages;

B) Habitat Assessment Data Report, dated: August 19, 2004; prepared by ECORP Consulting, 31 pages;

C) Preliminary Results for Exotic Species Removal Techniques, Fall 2004, dated: December 8, 2004; prepared by ECORP Consulting, 33 pages; and,

D) California Red-Legged Frog Focused Surveys, August 2004; prepared by Cadre Environmental.

An additional but valuable publication, not done as part of the project is:

Current Status of Southern Steelhead/Rainbow Trout in San Mateo Creek, California. Hovey, Tim E., in California Fish and Game 90(3):140-154 2004.

In September 2004, the Conservancy approved a third-phase of the project and grant for additional exotic species removal testing and development of an exotic species and conservation management strategy and plan.

A historical component of the project has always been a Technical Advisory Committee (formerly called the Management Committee). The Technical Advisory Committee (TAC) for the project reviews proposed restoration and planning activities and provides technical guidance for the project. An additional role of the TAC is to provide linkages to key stakeholders and agencies that have an interest in the outcome of the project. Members include or have included:

- Allen Greenwood, San Diego Trout
- Mike Pottorf, San Diego Trout
- Chris Kroll, CA Coastal Conservancy
- Tim Hovey, Biologist, C.D.F.G.
- Mary Larson, Manager, C.D.F.G
- Walt Wilson, Biologist, Camp Pendleton Marine Base
- Bill Berry, Natural Resources Office, Camp Pendleton
- Jesse Bennett, U.S.F.W.S.
- Keith Fletcher, District Ranger, Cleveland National Forest

- Mary Thomas, Cleveland National Forest
- Stan Glowacki, NOAA
- David Pryor, CA Dept of Parks & Rec.
- George Sutherland, Local Project Manager, South Coast Chapter TU
- Chuck Bonham, State Director, California TU.
- Don Duff, Aquatic Resources Consultant TU

2. PROBLEM STATEMENT AND ISSUES OF CONCERN

Fisheries biologists have become increasingly aware that the production capability of small coastal streams such as San Mateo Creek may be relatively small compared to large, perennial river systems, but collectively they provide a means to ensure a greater diversity of subpopulations, and are critical to range expansion and recovery after drought or other perturbations. Thus, utilization of these habitats increases the likelihood of the long-term survival of the species and is even more critical now that habitat of many southern California streams has become severely impacted or eliminated due to water development and adverse land-use practices.

Restoring steelhead and other native fish to San Mateo Creek and nearby waters will be a monumental task. All of the factors thought to have contributed to the original population decline of these fish continue to persist. While much of the discussion and planning primarily names steelhead as the target organism for recovery efforts, recovery work will benefit all native fish. Two factors in particular, however, are thought to preclude the presence of a sustainable steelhead fishery in the San Mateo Creek watershed. These are: (1) the extensive distribution and high abundance of exotic species in San Mateo Creek, and (2) groundwater use in the watershed (Woefel 1991).

The presence of non-native species within a creek or stream system can quickly extirpate native fish and amphibian species within that system (ECORP 2003, CDFG 2000b). Species such as bullfrogs, largemouth bass, mosquito fish, red crayfish, green sunfish, black bullhead and bluegill, all of which occur in San Mateo Creek, have all been documented to negatively impact native fish.

In the case of San Mateo Creek, where steelhead trout are native, the high population of exotic species puts juvenile steelhead under extreme pressure. When lower stream flow levels and higher water temperatures cause environmental conditions to become sub-optimum for the native steelhead, the exotics thrive. The exotics reach reproduction size rapidly in these conditions and consequently begin breeding sooner and more often. This proliferation of exotics quickly increases predatory and competitive pressures on the individual native steelhead in a stream system adding to the extreme population pressure already facing the species. Stock ponds on private inholdings in the upper basin are the major source of exotic amphibians and fish to the watershed.

A 2004 CDFG status report (Hovey 2004) provides additional information about fluctuating water availability in the San Mateo Creek watershed. Groundwater pumping began to increase in the late 1950s. A change in farming practices from dry-land farming to more water-reliant produce influenced the increase in groundwater use. Water use can alter stream habitat. For example, when

pumping affects surface flow, riffles and gravel beds or other important spawning or rearing habitats may turn dry or be exposed. Steelhead can become trapped in isolated pools. Lower surface flows often mean higher water temperatures and impeded steelhead migration. In addition, flow alterations may also contribute to earlier closure of the estuary and therefore greater impediments to upstream and downstream fish migration.

Finally, southern California has experienced incredible growth and development since World War II. While San Mateo Creek watershed is approximately 90% in public ownership, growth pressures surround the CNF, Camp Pendleton, and San Onofre State Park. Future development will increase the need to understand and implement conservation and restoration activities for native steelhead trout regarding exotic species, water use, and land practices related issues.

The creek passes through properties with differing ownerships. Numerous regulatory agencies have jurisdiction over management and restoration activities on the creek. It is paramount that representatives from all stakeholders have adequate opportunity to review all relevant reports, findings, recommendations and plans deriving from this project so that each can properly discharge their responsibilities relative to the project.

3. CONSERVATION OVERVIEW

To meet the goal and objectives of the Conservation Strategy and Plan, the following conservation and restoration actions must be implemented for Southern Steelhead Trout in San Mateo Creek.

1. Determine SST population demographic characteristics;
2. Genetically characterize populations of SST;
3. Protect the genetic integrity of SST populations;
4. Expand SST population and distribution through introduction or reintroduction from either transplanted or a broodstock of SST;
5. Monitor the SMC Population;
6. Describe SST habitat requirements;
7. Enhance and maintain SST habitat;
8. Monitor habitat quantity and quality;
9. Selectively control nonnative and/or exotic species;
10. Control and prevent the spread of whirling disease;
11. Enforce regulatory mechanisms to ensure compliance;
12. Ensure funding of conservation measures;
13. Reduce social-political conflicts; and,
14. Implement an information and education program.

Coordinating Conservation Activities

The SMC Project TAC will administer the CSP. The TAC consists of designated agency and partner organization representatives and may include technical and legal advisors and other members as it determines necessary. The Trout Unlimited (TU) local representative will serve as the designated Team Leader, and will be responsible for coordinating meetings and implementation schedules for conservation activities as well as monitoring actions undertaken pursuant to the CSP.

The CSP has a five-year time frame from 2007-2011. The CSP is a flexible document and will be revised as needed. The TAC will review the effectiveness of the CSP annually. The TAC will meet at least twice annually, spring and fall, to develop, review, and schedule work plans for the fiscal year, set drainage-wide priorities, coordinate management and field actions and/or tasks to effectively implement this CSP. It will also make recommendations to the responsible agencies and funding entities for the conservation of SST in SMC.

TAC meetings will be open to the public. Minutes of the meetings and progress reports will be distributed to the TAC and partner organizations. Other interested parties may obtain minutes and progress reports upon request.

Funding Conservation Actions

Funding and expenditures to implement the CSP will be provided by the California Coastal Conservancy (CCC) pursuant to funds specifically allocated in the "Safe Neighborhood Parks, Clean Water, Clean Air and Coastal Protection Bond Act of 2000" (Proposition 12). The SMC Project is expected to exist through 2011.

Additional funding for the CSP may also be provided by a variety of sources and/or grants, from Federal, State and local conservation organizations and sources. In-kind contributions in the form of personnel, field equipment, supplies, etc., will be provided by participating agencies and organizations. In addition, each agency will have specific tasks, responsibilities and proposed actions/commitments related to their in-kind contributions.

It is understood that all funds expended in accordance with the CSP are subject to approval by the appropriate local, state or Federal appropriations. This instrument is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between the parties to this instrument will be handled in accordance with applicable laws, regulations, and procedures, including those for Government procurement and printing. Such endeavors will be outlined in separate agreements that shall be made in writing by representatives of the parties and shall be independently authorized by appropriate statutory authority. This instrument does not provide such authority. Specifically, this instrument does not establish authority for noncompetitive awards to the cooperator of any contract or other agreement.

Conservation Strategy Assessment

Habitat Importance

Researchers believe that historically SST inhabited all coastal systems along the California coastline with suitable habitat (Woefel 1991, CDFG 2000b, Higgins 1991, Hubbs 1946). However, in the last one hundred years, human land use and stream alterations have caused loss of connectivity among populations and loss and degradation of suitable habitat, which has greatly restricted SST throughout its historical range. Habitat degradation within this range has fragmented and reduced the overall complexity of aquatic habitats. Habitat fragmentation is perhaps the most significant problem threatening the future survival of many species (FWS 1998, Higgins 1991). Reservoirs and irrigation diversions have eliminated migratory corridors throughout the range of SST. Although it is unknown the extent SST may have moved within their historic range before the proliferation of

barriers, these populations are now either extinct or isolated with no opportunity for migration in many areas. Although presence of habitat is important, the quality and complexity of existing habitat is equally important to a population.

Threats

SST is a unique salmonid subspecies native to the Pacific coastal area of southern California. Historically, SST occurred from San Luis Obispo County to Baja, Mexico. These streams may have supported up to 60,000 steelhead trout. However, human activities such as water development, agricultural activities, energy development, mining, timber, harvesting, grazing, over fishing and the introduction of non-indigenous species have directly impacted SST populations and altered the southern California coastal ecosystem.

The success of any conservation and restoration or recovery program depends on eliminating or reducing the impact of activities that threaten existence of the species. These specific activities described below that threaten the persistence and restoration of SST populations could or are occurring in its range.

First, the abundance and quality of habitat once available to SST have declined. Thus, modification or loss of SST habitat or range has occurred. Historically, the primary causes of habitat loss were water development, livestock grazing, timber harvest, road construction, and energy development/mining activities. Specifically, diversion of stream flows that alters natural flow patterns has been one of the greatest causes of habitat loss (USGS 2000). Water development has altered historic migration corridors, flow timing, duration and magnitude or completely dewatered stream segments (USMC 1993). Diversions have fragmented stream habitats and disconnected tributary streams from mainstem rivers.

Grazing can negatively influence stream habitats and stream communities (USDA FS 1986, CDFG 2001). Past and some current livestock grazing practices adversely impact remaining SST and their habitat. Poor grazing practices can alter sediment transport regimes and stream bank stability and can change water quality, substrate composition and channel structure, which may result in loss of pool habitat, reduced instream cover, increased water temperature, and loss of quality substrate required for migration, spawning, rearing, and food production.

Road construction has affected SST in two ways (USDA FS 1986, Higgins 1991). Road construction related-sediment may reach streams during runoff. Erosion from road surfaces and drainage ditches can also occur. In addition, road construction can result in poorly designed and placed culverts, which block SST migration. In streams throughout coastal California, road culverts hinder passage of SST, which results in population isolation. This may have a significant effect on the long-term genetic characteristics of the subspecies. Finally, energy development and mining activities have had effects in some areas, although impacts are often localized.

Second, disease, predation, competition and genetic hybridization each affect SST. Sportfish stocking programs have been responsible for the introduction of many nonnative species that impacted native salmonid populations. Because both native and nonnative salmonids have been stocked throughout the SST historic range, hybridization poses a significant threat to the genetic integrity of SST populations. The SST can hybridize with hatchery rainbow trout and other cutthroat

subspecies in some situations. Hybridization with nonnative fish leads to an eventual swamping of the native SST genotype. Hybridization among salmonid subspecies can result in the loss of the characteristic SST phenotype. Moreover, studies suggest that non-native, introduced salmonids will competitively replace native salmonid species. Other species, such as, warmwater fish largemouth bass, bluegill, and bullfrogs also compete with SST in the SMC drainage.

Predation is a serious threat (especially to early life stages) to SST, particularly in San Mateo Creek, and is a principal focus of the SMC Project and the CSP. Non-native fish species and amphibians, as listed above, consistently prey on fry and juvenile SST life-stages in the SMC drainage. These non-native species were either placed in the creek and its tributaries, or escape from private ponds in the upper basin.

The recent introduction of whirling disease and New Zealand mud snails into western river systems poses a great disease threat. SST may be more vulnerable to disease and parasites when exposed to adverse conditions and unnatural or human induced forces. It is conceivable that anglers could transmit the disease to SMC waters from parasites attached to waders, boots, etc. that have not been properly disinfected. Other virus and disease could occur as result of warm, intermittent and/or stagnant waters during summer low flow periods.

Over harvesting is also a threat, although the State of California currently enforces angling restrictions in the SST range to protect this subspecies. SST is designated as a special status species by California. The SST is classified as endangered under the federal Endangered Species Act. NOAA Fisheries has federal jurisdiction over SST. The U.S Forest Service manages the SST under its Threatened, Endangered, and Sensitive species and wilderness and wild and scenic river programs.

Finally, other natural or human induced factors may affect the continued existence of SST. For example, SST are at the far southern end of the range of salmon along the west coast. Climate change and global warming may significantly affect the species persistence. In addition, natural climatic events such as flood, fire and drought may threaten specific populations of SST. However, these forces only pose threats as long as the SST range remains fragmented and populations are small and face cumulative impacts from the threats described in the CSP. Small, isolated populations are more susceptible to catastrophic loss and impacts from demographic stochasticity.

4. SAN MATEO CREEK WATERSHED CONSERVATION GOALS and OBJECTIVES

The approach for conservation of SST described in this section of the CSP is based on the conservation strategies and management plans developed by the State and Federal resource management agencies, sound conservation guidelines and principals, and current information on the status and threats to the species (USDA FS 1986, Higgins 1991, Woefel 1991, Hovey 2004). The goals, objectives, and management actions represent a conservation strategy, based on best available information, past and present, for SST within the species historic range in San Mateo Creek (SMC) (Wachetell 1978, Lichvar et al 2002). This information is presented in context so that the actions needed to conserve SST in SMC can be easily understood, explained, and implemented.

Goal

The goal in the SMC drainage is to ensure the long-term existence of SST.

Objectives

In order to meet this goal, two objectives must be satisfied. Each general objective has specific components that must also be met. These objectives were developed and quantified using the best available expertise and information.

First, agencies and stakeholders in the SMC Project and beyond must manage for a SST conservation population in San Mateo Creek and its tributaries. This includes:

- Establishing and maintaining a SST sustainable conservation population in SMC and its tributaries; and,
- Establishing and maintaining a meta-population within the Devils Canyon tributary.

Second, agencies and stakeholders in the SMC Project and beyond must eliminate the threats to SST in San Mateo Creek. This includes:

- Eliminating or significantly reducing threats that cause any present or potential destruction, modification, or curtailment of habitat or its range in SMC drainage, by:
    1) Maintaining or restoring water quality to a degree that provides for stable and productive riparian and aquatic ecosystems;
    2) Maintaining or restoring stream migratory corridors, channel integrity and channel processes;
    3) Maintaining or restoring instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the provision for adequate pools and riffles for SST in periods of high and low flows;
    4) Maintaining and/or restoring the diversity and productivity of desired plant communities in riparian zones;
        a) elimination of non-native invasive vegetative species from riparian and upland zones;
    5) Maintaining or restoring riparian vegetation to:
        a) provide an amount and distribution of large woody debris characteristics of natural aquatic and riparian ecosystems;
        b) provide adequate summer and winter thermal regulation within the riparian and aquatic zones;
        c) help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed;
    6) Maintaining or restoring riparian and aquatic habitats and conditions necessary to foster the evolution of distinct populations segments within specific geoclimatic reaches of SMC; and,
    7) Maintaining or restoring habitat to support populations of well-distributed plants, vertebrates, and invertebrates that contribute to the viability of riparian dependent communities.

- Eliminate or significantly reduce threats caused by disease, predation, competition and hybridization, by:
    1) Maintaining or restoring populations in a condition where hybridization, competition, and predation do not significantly alter the critical ecological processes;
    2) Maintaining or restoring populations in a condition where disease does not significantly alter critical ecological processes;
        a) elimination of non-native species of aquatic organisms that threaten continued existence of SST populations;
            i) provide for non-native species control and/or removal through mechanical methods, *i.e.* netting, seining, electrofishing, detenator chord, *etc.*; and,
            ii) provide for removal of non-native species through approved chemical renovations as necessary and appropriate, *i.e.* rotenone.

- Eliminate and/or significantly reduce the detrimental impacts that other natural or human-induced conditions which threaten the continued existence of SSTS, including land and road developments, private ponds, and surface and groundwater use.

5. SPECIFIC CONSERVATION ACTIONS

The following section outlines a general list of actions that eliminate or reduce threats to SST persistence and provide for its restoration in the SMC drainage. Each general action includes a list of specific actions that should be implemented.

To achieve the first objective above (*i.e.*, to expand the number and range within San Mateo Creek of a sustainable genetically appropriate population to ensure the long-term existence of the species), the CSP identifies four core actions.

Action One: Determine SST populations in SMC and tributaries.

This action involves the following tasks and approximate schedules.

1. Locate and assess SST populations and confirm population status in mainstream reaches and tributaries on an annual basis.
    a) Ongoing annually by CDFG, spring, summer, fall
    b) Report to TAC at fall meeting annually

2. Analyze habitat fragmentation to determine the degree of survivability required for population annual and seasonal persistence.
    a) ECORP report completed 2005
    b) Analysis by CDFG & TU, Fall 2007

3. Determine the number of individuals and habitat requirements needed to maintain SST conservation populations in each habitat reaches of SMC.
    a) Ongoing by CDFG, FWS, NMFS; determine by Fall 2007

.**Action Two: Genetically characterize populations of SST.**

This action involves the following tasks and approximate schedules.

1. Continue, as needed, to conduct standardized genetic samplings of SST populations within SMC.

2. Collect samples for meristic analysis and/or molecular analysis
    a) Samples collected & analyzed 2001 by CDFG, NMFS

3. Prepare reports, peer review reports, and summarize all relevant information
    a) NMFS report on findings 2005 (need copy for Fall TAC meeting)
    b) Make recommendations on population designations, as needed
    c) Review annually; TBD by NMFS, FWS, CDFG

Action Three: Expand SST populations and distribution through introduction or reintroduction from either transplanted or broodstock, i.e. from streamside incubators, etc.

This action involves the following tasks and approximate schedules.

1. Identify and develop broodstock sources including identification of wild sources, disease certification, rearing facilities, and protocols for taking wild fish and eggs.
    a) Hubbs Institute captive rearing program with San Diego Trout, CDFG, TU: ongoing.
    b) Identify other streams sources with SST in Orange/San Diego Co. by CDFG, SDT, TU, FWS, NMFS: annual assessments ongoing.
    c) Report due to TAC at Fall 2007 meeting.

2. Reintroduce SST populations into appropriate reaches in the SMC drainage.
    a) Possibly in 2007-2008 following removal of invasive species; TBD by CDFG, FWS, NMFS

3. Establish a SST captive rearing and conservation hatchery program within the state hatchery program that will be responsible for cultivation of SST to be used in introduction, reintroduction and stocking programs for conservation populations.
    a) Currently ongoing with CDFG and SDT.
    b) Develop a captive rearing plan: by SDT, TU, CDFG draft by Fall TAC meeting
    c) Streamside incubator protocol for stocking when needed: TU, CDFG, SDT draft by Fall TAC meeting.

Action Four: Monitor Populations.

This action involves the following tasks and approximate schedules.

1. Implement SST population monitoring protocol to determine program effectiveness.
    a) Continue ongoing surveys by CDFG and volunteer partners (TU et al) on a seasonal basis. Annual report at Fall 2007 TAC meeting.
    b) Evaluate conditions of populations using baseline data.

i) Ongoing annually by CDFG, TU, SDT: report at Fall 2007 TAC meeting.

To achieve the second objective above (*i.e.*, eliminate threats to SST), the CSP identifies six core actions.

Action One: Monitor SST habitat requirements.

This action involves the following tasks and approximate schedules.

1. Identify and analyze SST habitat requirements and conditions being implemented through CDFG, CNF ForPlan, and PMB management using surveys and studies of hydrologic, hydraulic, biologic and watershed features, and specifically:
    a) flow quantity, timing, and duration from USGS, CNF, and PMB data;
    b) riffle to pool ratios and substrate size and composition at seasonal periods;
    c) surveys for non-native fish and aquatic organisms by mechanical methods on a seasonal basis;
    d) report on as needed at Fall TAC meeting.

Action Two: Enhance and maintain habitat.

This action involves the following tasks and approximate schedules.

1. Enhance and/or restore connectedness and opportunities for migration where possible, with the focus of ensuring migratory corridors retain some degree of their natural physical and biological condition to enable migration and gene flow.
    a) Survey reaches to define perennial and intermittent reaches, barriers, sinks, etc. exist. (ECORP 2004-2005; CDFG/CNF 2006-2007)
    b) Enhance fish passage in designated reaches throughout SMC. Tasks may include culvert replacements, improved road drainage, road decommissioning, stabilizing road fill and cut-slope areas, and improving channel functioning fish passage. (Ongoing by CNF, PMB, CDFG/TU).
    c) Restore altered channel and habitat features to allow for fish passage. Tasks may include stream bank stabilization, large woody debris introduction, and vegetation planting for improved riparian areas.
        i) Identify reach actions needed by baseline data; by Fall 2007, CDFG, CNF, TU

2. Restore natural hydraulic and sediment regimes, restore floodplain and riparian function, and expand available spawning and rearing habitat.
        i) Determine needed actions by reach: by Fall 2007, CDFG, CNF, TU.

3. Develop a mitigation protocol for proposed land and water development and/or future habitat alteration, where needed
    a) Identify needs for proposed State Highway through watershed; by Fall 2007 by CDFG, CNF, FWS, NMFS, TU
    b) Identify management needs for private (fish) ponds
        i) MRCD report/brochure due Fall 2006

ii) Identify needs and actions; Fall TAC meeting by CDFG, TU, CNF.

4. For land management activities to enhance and maintain habitat, consider utilizing the guidelines listed in the Inland Native Fish Strategy (USFS 1995, Appendix VI) as they relate to the following management activities. Incorporate into the revised CNF Forest Plan (by CNF 2006-2007):
   a) Timber Management
   b) Roads Management
   c) Grazing Management
   d) Recreation Management
   e) Minerals Management
   f) Fire/Fuels Management
   g) General Riparian Area Management
   h) Watershed and Habitat Restoration
   i) Fisheries and Wildlife Restoration

Action Three: Monitor Habitat Quantity and Quality.

1. Implement habitat monitoring protocol on CNF and PMB to determine program effectiveness.
   a) Annually by CNF, CDFG, PMB using USFS R-5 and/or CDFG habitat monitoring protocol and/or FS national protocols. Report on at Fall TAC.

2. Evaluate conditions of habitats annually using baseline and annual survey data.
   a) By CDFG/TU, CNF, PMB annually; report at Fall 2006 TAC.

Action Four: Selectively control nonnative species.

This action involves the following tasks and approximate schedules.

1. Determine where detrimental reaches occur where hybridization, competition and disease occur or could occur between SST and sympatric nonnative species.

2. Complete (2006) the MRDC pond and non-native aquatic organism survey on private lands within the upper watershed, and,

3. Produce an educational brochure (MRDC 2006) to alert landowners of potential threats by non-native aquatic organisms to SST populations.
   a) Report accomplishments at Fall 2006 TAC meeting.

4. Control spread of nonnative aquatic species
   a) Use mechanical methods annually to assess status.
      i) Annual and seasonally by CDFG and partners, using seines, nets, detonator chord, and electrofishing.
      ii) Report accomplishments at Fall TAC meeting by CDFG.
   b) Treat reaches and/or stream segments, as needed, to eliminate non-native aquatic species threats

c) Eradicate detrimental nonnative fish and aquatic organisms where appropriate, i.e. on CNF NFS lands, and private in-holdings fish ponds, and on PMB lands. Targeted species may include other salmonids, warmwater fish (bass, bluegill), bullfrogs, and other aquatic organisms. This task could include the limited use of piscicides (rotenone) to remove competing nonnative species or hybridizing nonnative salmonids with intent to restore and maintain SST populations and eliminate risks to their continued survival in the SMC drainage. Standard procedure for chemical stream treatment will include investigation of the feasibility and effectiveness of post-treatment macroinvertebrate community restoration.

- Begin document and NEPA/CEQA preparation in April 2006 with possible first treatment in Fall 2006 if approvals provided by that time. Otherwise a planned treatment will begin in 2007. Document preparation to be completed by CNF, CDFG, with FWS and NMFS. Report on planning at Fall TAC meeting.
- Treatment section in SMC within CNF from Tenaja Falls (upper reach) with treatment stations located approximately every 1/2 to 1-mile, and including perennial tributaries where it has been determined that non-native species occur, and continuing to the PMB. Treatments will be planned in accordance with low flow conditions where intermittent sections with pool will occur and no continuous flow exists from the upper station to the PBM station boundary. Treatment responsibility by CDFG with partners participating. Complete first treatment by Fall 2008; continue spot treatments in selected reaches as needed; annually after 2008 by CDFG

Action Five: Enforce regulatory mechanisms to ensure compliance.

This action involves the following tasks and approximate schedules.

1. Enhance or maintain regulatory mechanisms that:
   a) prevent or curtail destruction of habitat;
   b) prevent the introduction or recreational, scientific, or educational purposes;
   c) exhibit detrimental interactions (hybridization, competition, predation) with SST;
   d) prevent the introduction or spread of detrimental diseases
   e) prevent commercial harvest.
   f) prevent any impacts associated with recreational angling.
   g) eliminate or significantly reduce detrimental impacts associated with threats caused by other natural or human induced factors affecting the continued existence of the species.

2. Review regulatory mechanisms at Fall TAC annually; by CDFG, FWS, NMFS

Action Six: Develop and implement a public information and education program.

This action involves the following tasks and approximate schedules.

1. Develop agency media and information brochures (by agencies 2006-2007).

2. Develop MRCD outreach and education program.

a) Survey and identify (MRDC summer 2006-07) private waters within SMC drainage on private lands that pose a threat to SST from exotic species occupancy.
b) Produce a brochure that can be used by the public and landowners about non-native invasive species, ie. plant and animal, and their impacts to water quality and SST native species. (by MRCD, Fall TAC 2006).

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APPENDIX I

San Mateo C

AP

Objectives and Actions	**Lead with partners**
Objective I: Expand number & range of SST in SMC	
I.1. Expand Range of SST	
1.a Locate SST populations in SMC & Tributaries	CDFG w/TU.CNF,SDT,FWS, PMB
1.b. Analyze habitat fragmentation	
1.b.i. ECORP surveys	ECORP w/TU, CNF, CDFG
1.b.ii.Analyze survey results	CDFG w/TU, CNF
1.c. Determine number of individuals	CDFG w/FWS, NMFS
see I.1.a. pg 12	
I.2 Genetically characterize populations of SST	
2.a.i. Collect samples for analysis	CDFG w/ NMFS, FWS
2.a.ii. Prepare report on genetic results	NMFS w/ CDFG
2.a.iii. Make recommendations	NMFS w/ FWS, CDFG
see I.2, pg 12	
I.3 Expand SST through introduction or reintroduction	CDFG w/ TU, SDT, CNF, PMB
3.a. Identify & develop broodstock source	
3.a.i. Hubbs Institute program	Hubbs w/CDFG, SDT, TU
3.a.ii. Identify SST pop's in San Diego County	CDFGw/SDT, TU, FWS, NMFS
3.b. Reintroduce SST in SMC	CDFG w/ FWS, NMFS, TU
3.c. Establish SST captive rearing program	CDFG w/ SDT, TU
3.c.i. Develop captive rearing plan	SDT w/ CDFG, TU, Hubbs
3.c.ii. Develop streamside incubator protocol	TU w/ CDFG, SDT
see I.3.a. pg 13	
I.4. Monitor Populations	CDFG w/ TU, SDT, CNF, PMB
4.a.i. Implement monitoring;continue surveys	CDFG w/ TU, SDT, CNF, PMB
4.b. Evaluate population data	CDFG w/ TU, SDT, CNF, PMB
see I.4.a, pg 13	
Objective II: Eliminate Threats to SST	
II.A. Eliminate or reduce present threats	
A.I. Monitor SST Habitat Requirements	

I.a. Identify & analyze habitat requirements see II.A.1. pg 13	CDFG w/ CNF, PMB, TU, SDT
A.2. Enhance & maintain habitat	CNF/PMB w/ CDFG, TU, SDT
2.a. Enhance or restore connectedness	CNF/PMB w/ CDFG, TU, SDT
2.b. Enhance fish passage	CNF/PMB w/ CDFG, TU, SDT
2.b.1. Restore altered channel & habitat features	CNF/PMB w/ CDFG, TU, SDT
2.b.2. Restore natural hydrologic regime	CNF/PMB w/ CDFG, TU, SDT
2.c. Develop mitigation protocol re land development	
2.c.1.Identify mitigation for proposed state highway	CDFG w/ CNF, PMB, TU, SDT, FWS, NMFS
2.c.2.ii. Identify management for private ponds	CDFG w/ MRCD, TU, SDT, CNF
2.d. Use FS Inland Native Fish Strategy Guidelines see II.A.2., pg 13-14	CNFw/PMB,CDFG, TU, SDT
A.3. Monitor Habitat Quality & Quantity	
3.a. Implement habitat monitoring protocol	CDFG w/ CNF, PMB, TU, SDT
3.b. Evaluate habitat condition see II. A. 3. , pg 14	CDFG w/ CNF, PMB, TU, SDT
II.B.Eliminate or reduce threats to SST	CDFG w/ CNF, PMB, TU, SDT
B.1.Selectively control nonnative species	
B.1.a. Determine detrimental reaches	CDFG w/ CNF, MRDC, TU, SDT
B.1.a.aa. Complete MRDC pond/nonnative spp.survey	MRDC w/ CDFG, CNF, TU
B.1.a.bb. Complete landowner brochure	MRDC w/ CDFG, CNF, TU, FWS, PMB, NMFS
B.1.b. Control spread of nonnative species	CDFG w/ CNF, FWS, NMFS, TU, SDT
B.1.b.1. Use mechanical methods	CDFG w/ TU, SDT, CNF
B.1.b.2. Renovate stream segments	CDFG
B.1.b.2.aa. Eradicate nonnative species on SMC-CNF	CDFG w/ CNF, TU, FWS, NMFS, SDT
B.1.b.2.aa.1.Treat SMC:Tenaja falls to PMB	CDFG w/ CNF, FWS, NMFS, TU, SDT
B.1.b.2.bb. Prepare NEPA/CEQA documents	CDFG/CNF w/ FWS, NMFS
B.1.b.2.cc. Treat SMC: Tenaja Falls to PMB see II.B.1., pg 14-15	CDFG w/ CNF, FWS, NMFS, TU, SDT
II.C. Eliminate threats from inadequate regulations	
C.1. Enforce Regulatory Mechanisms	CDFG w/ CNF, FWS, NMFS, PMB
C.1.a. Enhance or maintain regulatory mechanisms	CDFG w/ CNF, FWS, NMFS, PMB
C.1.a.I. Prevent habitat destruction	CDFG w/ CNF, FWS, NMFS, PMB
C.1.a.ii. Prevent introductions	CDFG w/ CNF, FWS, NMFS, PMB
C.1.a.iii. Prevent detrimental interactions	CDFG w/ CNF, FWS, NMFS, PMB
C.1.a.iv. Prevents disease introduction	CDFG w/ CNF, FWS, NMFS, PMB
C.1.a.v. Prevents commercial harvest	CDFG w/ CNF, FWS, NMFS, PMB
C.1.a.vi. Prevents recreational angling impacts	CDFG w/ CNF, FWS, NMFS, PMB
C.1.a.vii. Prevents human induced impacts see II. C. 1. Pg15	CDFG w/ CNF, FWS, NMFS, PMB
C.2. Develop public information/education program	
C2.a. Develop agency media brochures	CDFG w/ CNF, FWS, NMFS, PMB

C.2.b.i. Identify private lands-waters that pose threats	MRDC w/ CDFG, CNF, FWS, NMFS, TU, SDT
C.2.b.ii. Produce brochure for landowners	MRDC w/ CDFG, CNF, FWS, NMFS, TU, SDT
Project Manager, personnel mgmt	

Conservation Actions for 2006 Budget

1.1.a Snorkle Surveys to ascertain SST presence v non-native species:	8 days, 2 persons (CDFG)
1.3.a Develop & identify captive reearing program:	3 weeks, 3 persons (CDFG. TU, ADT, Hubbs
1.4.a Monitor SST populations, Fyke net at mouth for migration	10 days 4x/day (CDFG, TU)
II.A.1.a Water quality monitoring, 4 stations	2 days, 2 persons (TU/SDT)
II.A.3.a Habitat maintenance, macro monitoring baseline, 3 stations @ 3 sites each Plus analysis of samples	2 persons (TU/SDT)
II.A.3.b Analyze habitat data	2 persons (TU/CDFG), 2 weeks
II.B.1.b Control non-native species, pesticide treatment 6 miles (intermittent)	6 persons (CDFG), 2 weeks
II.C.2.b MRCD outreach program & private waters inventory	

APPENDIX I I

LIST OF MANAGEMENT AGREEMENTS

U.S. FOREST SERVICE – TROUT UNLIMITED MASTER AGREEMENT, 1988, REVISED 2002

U.S FOREST SERVICE-BLM-TROUT UNLIMITED, CALIFORNIA AGREEMENT, 2004

TROUT UNLIMITED – U.S. NAVY AGREEMENT, 2000

U.S. FOREST SERVICE, REGION 5 – CALIFORNIA DEPARTMENT OF FISH & GAME

APPENDIX III

Specific action items that will occur toward enhancing and maintaining habitat as listed in the Inland Native Fish Strategy (USFS 1995) for each of the respective management areas.

Timber Management

TM-1 Prohibit timber harvest, including fuelwood cutting, in Riparian Habitat Conservation Areas, except as
described below:

a. Where catastrophic events such as fire, flooding, volcanic, wind, or insect damage result in degraded riparian conditions, allow salvage and fuelwood cutting in Riparian Habitat Conservation Areas only where present and future woody debris needs are met, where cutting would not retard or prevent attainment of other Riparians Management Objective, and where adverse effects can be avoided to inland native fish. For priority watersheds, complete watershed analysis prior to salvage cutting in RHCAs.

b. Apply silviculturalpractices for Riparian Habitat Conservation Areas to acquire desired vegetation
characteristics where needed to attain Riparian Management Objectives. Apply silvicultural

practices in a manner that does not retard attainment of Riparian Management Objectives and that
avoids adverse effects on inland native fish.

Roads Management

RF-1 Cooperate with Federal, Tribal, State, and county agencies, and cost-share partners to achieve
consistency in road design, operation, and maintenance necessary to attain Riparian Management Objectives.

RF-2 For each existing or planned road, meet the Riparian Management Objectives and avoid adverse
effects to inland native fish by:

a. Completing watershed analyses prior to construction of new roads or landings in Riparian Habitat
Conservation Areas within priority watersheds.

b. Minimizing road and landing locations in Riparian Habitat Conservation Areas.

c. Initiating development and implementation of a Road Management Plan or a Transportation Management Plan. At a minimum, address the following items in the plan:

1) Road design criteria, elements, and standards that govern construction and reconstruction.

2) Road management objectives for each road.

3) Criteria that govern road operation, maintenance, and managment.

4) Requirements for pre-, during-, and post-storm inspections and maintenance.

5) Regulation of traffic during wet periods to minimize erosion and sediment delivery and accomplish other objectives.

6) Implementation and effectiveness monitoring plans for road stability, drainage, and erosion control.

7) Mitigation plans for road failures.

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d. Avoiding sediment delivery to streams from the road surface.

1. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe.

2. Rout road drainage away from potentially unstable stream channels, fills, and hillslopes.

e. Avoiding disruption of natural hydrologic flow paths.

f. Avoiding sidecasting of soils or snow. Sidecasting of road material is prohibited on road segments within or abutting RHCAs in priority watersheds.

RF-3 Determine the influence of each road on the Riparian Management Objectives. Meet Riparian
Management Objectives and avoid adverse effects on inland native fish by:

a. Reconstructing road and drainage features that do not meet design criteria or operation and maintenance standards, or that have been shown to be less effective than designed for controlling sediment delivery, or that retard attainment of Riparian Management Objectives, or do not protect
priority watersheds from increased sedimentation.

b. Prioritizing reconstruction based on the current and potential damage to inland native fish and their priority watersheds, the ecological value of the riparian resources affected, and the feasibility
of options such as helicopter logging and road relocation out of Riparian Habitat Conservation

Areas.
c. Closing and stabilizing or obliterating and stabilizing roads not needed for future management activities. Prioritize these actions based on the current and potential
damage to inland native fish in priority watersheds, and the ecological value of the riparian resources affected.
RF-4 Construct new, and improve existing culverts, bridges, and other stream crossings to accommodate a
100-year flood, including associated bedload and debris, where those improvements would/do pose a
substantial risk to riparian conditions. Substantial risk improvements include those that do not meet
design and operation maintenance criteria, or that have been shown to be less effective than designed
for controlling erosion, or that retard attainment of Riparian Management Objectives, or that do not
protect priority watersheds from increased sedimentation. Base priority for upgrading on risks in priority watersheds and the ecological value of the riparian resources affected. Construct and maintain
crossings to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure.
RF-5 Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams.
Grazing Management
GM-1 Modify grazing practices (e.g., accessibility of riparian areas to livestock, length of grazing season,
stocking levels, timing of grazing, etc.) that retard or prevent attainment of Riparian Management
Objectives or are likely to adversely affect inland native fish. Suspend grazing if adjusting practices is
not effective in meeting Riparian Management Objectives.
GM-2 Locate new livestock handling and/or management facilities outside of Riparian Habitat Conservation
Areas. For existing livestock handling facilities inside the Riparian Habitat Conservation Areas, assure
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that facilities do not prevent attainment of Riparian Management Objectives. Relocate or close facilities where these objectives cannot be met.
GM-3 Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas
and times that would not retard or prevent the attainment of Riparian Management Objectives or adversely affect inland native fish.
GM-4 Adjust wild horse and burro management to avoid impacts that prevent attainment of Riparian
Management Objectives or adversely affect inland native fish.
Recreation Management

RM-1 Design, construct, and operate recreation facilities, including trails and dispersed sites, in a manner that does not retard or prevent attainment of the Riparian Management Objectives and avoids adverse effects on inland native fish. Complete watershed analysis prior to construction of new recreation facilities in Riparian Habitat Conservation Areas within priority watersheds. For existing recreation facilities inside Riparian Habitat Conservation Areas, assure that the facilities or use of the facilities would not prevent attainment of Riparian Management Objectives or adversely affect inland native fish. Relocate or close recreation facilities where Riparian Management Objectives cannot be met or adverse effects on inland native fish cannot be avoided.

RM-2 Adjust dispersed and developed recreation practices that retard or prevent the attainment of Riparian Management Objectives or adversely affect inland native fish. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective in meeting Riparian Management Objectives and avoiding adverse effects on inland native fish, eliminate the practice or occupancy.

RM-3 Address attainment of Riparian Management Objectives and potential effect on inland native fish in Wild and Scenic Rivers, Wilderness, and other Recreation Management plans.

Mineral Management

MM-1 Avoid adverse effects to inland native fish species habitat from mineral operations. If the Notice of Intent indicates a mineral operation would be located in a Riparian Habitat Conservation Area, or could affect attainment of Riparian Management Objectives, or adversely affect inland native fish, require a reclamation plan, approved Plan of Operations (or other such governing document), and reclamation bond. For effects that cannot be avoided, such plans and bonds must address the costs of removing facilities, equipment, and materials; recontouring disturbed areas to near pre-mining topography; isolating and neutralizing or removing toxic or potentially toxic materials; salvage and replacement of topsoil; and seedbed preparation and revegetation to attain Riparian Management Objectives and avoid adverse effects on inland native fish. Ensure Reclamation Plans contain measurable attainment and bond release criteria for each reclamation activity.

MM-2 Locate structures, support facilities, and roads outside Riparian Habitat Conservation Areas. Where no alternative to siting facilities in Riparian Habitat Conservation Areas exists, locate and construct the facilities in ways that avoid impacts to Riparian Habitat Conservation Areas and streams and adverse

effects on inland native fish. Where no alternative to road construction exists, keep roads to the minimum necessary for the approved mineral activity. Close, obliterate and revegetate roads no longer
required for mineral or land management activities.
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MM-3 Prohibit solid and sanitary waste facilities in Riparian Habitat Conservation Areas. If no alternative to
locating mine waste (waste rock, spent ore, tailings) facilities in Riparian Habitat Conservation Areas
exists, and releases can be prevented and stability ensured, then:
a. Analyze the waste material using the best conventional sampling methods and analytic techniques
to determine its chemical and physical stability characteristics.
b. Locate and design the waste facilities using the best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials. If the best conventional technology is not sufficient to prevent such releases and ensure stability over the long term, prohibit such facilities in Riparian Habitat Conservation Areas.
c. Monitor waste and waste facilities to confirm predictions of chemical and physical stability, and
make adjustments to operations as needed to avoid adverse effects to inland native fish and to attain Riparian Management Objectives.
d. Reclaim and monitor waste facilities to assure chemical and physical stability and revegetation to
avoid adverse effects to inland native fish and to attain Riparian Management Objectives.
e. Require reclamation bonds adequate to ensure long-term chemical and physical stability and successful revegetation of mine waste facilities.
MM-4 For leasable minerals, prohibit surface occupancy within Riparian Habitat Conservation Areas for oil,
gas, and geothermal exploration and development activities where contracts and leases do not already
exist, unless there are no other options for location and Riparian Management Objectives can be attained and adverse effects to inland native fish can be avoided. Adjust the operating plans of existing contracts to (1) eliminate impacts that prevent attainment of Riparian Management Objectives
and (2) avoid adverse effects to inland native fish.
MM-5 Permit sand and gravel mining and extraction within Riparian Habitat Conservation Areas only if no
alternative exist, if the action(s) would not retard or prevent attainment of Riparian Management Objectives, and adverse effects to inland native fish can be avoided.
MM-6 Develop inspection, monitoring, and reporting requirements for mineral activities. Evaluate and apply
the results of inspection and monitoring to modify mineral plans, leases, or permits as needed to eliminate impacts that prevent attainment of Riparian Management Objectives and avoid adverse effects on inland native fish.

Fire/Fuels Management

FM-1 Design fuel treatment and fire suppression strategies, practices, and actions so as not to prevent attainment of Riparian Management Objectives, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could perpetuate or be damaging to longterm ecosystem function or inland native fish.

FM-2 Locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of Riparian Habitat Conservation Areas. If the only suitable location for such activities is within the Riparian Habitat Conservation Area, an exemption may be granted following a review and recommendation by a resource advisor. The advisor would prescribe the location, use conditions, and rehabilitation requirements, with avoidance of adverse effects to inland native fish a primary goal. Use an interdisciplinary team, including a fishery biologist, to predetermine incident base and helibase locations during presuppression planning.

FM-3 Avoid delivery of chemical retardant, foam, or additives to surface waters. An exception may be

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warranted in situations where overriding immediate safety imperatives exist, or, following a review and recommendation by a resource advisor and a fishery biologist, when the action agency determines an escape fire would cause more long-term damage to fish habitats than chemical delivery to surface waters.

FM-4 Design prescribed burn projects and prescriptions to contribute to the attainment of the Riparian Management Objectives.

FM-5 Immediately establish and emergency team to develop a rehabilitation treatment plan to attain Riparian Management Objectives and avoid adverse effects on inland native fish whenever Riparian Habitat Conservation Areas are significantly damaged by a wildfire or a prescribed fire burning out of prescription.

Lands

LH-1 Require instream flows and habitat conditions for hydroelectric and other surface water development proposals that maintain or restore riparian resources, favorable channel conditions, and fish passage, reproduction, and growth. Coordinate this process with the appropriate State agencies. During relicensing of hydroelectric projects, provide written and timely license conditions to the Federal

Energy Regulatory Commission (FERC) that require fish passage and flows and habitat conditions that
maintain/restore riparian resources and channel integrity. Coordinate relicensing projects with the
appropriate State agencies.

LH-2 Locate new hydroelectric ancillary facilities outside Riparian Habitat Conservation Areas. For
existing ancillary facilities inside the RHCA that are essential to proper management, provide recommendations to FERC to assure that the facilities would not prevent attainment of the Riparian
Management Objectives and that adverse effects on inland native fish are avoided. Where these objectives cannot be met, provide recommendations to FERC that such ancillary facilities should be
relocated. Locate, operate, and maintain hydroelectric facilities that must be located in Riparian Habitat Conservation Areas to avoid effects that would retard or prevent attainment of the Riparian
Management Objectives and avoid adverse effects on inland native fish.

LH-3 Issue leases, permits, rights-of-way, and easements to avoid effects that would retard or prevent
attainment of the Riparian Management Objectives and avoid adverse effects on inland native fish.
Where the authority to do so was retained, adjust existing leases, permits, rights-of-way, and easements to eliminate effects that would retard or prevent attainment of the Riparian Management
Objectives or adversely effect inland native fish. If adjustments are not effective, eliminate the activity. Where the authority to adjust was not retained, negotiate to make changes in existing leases,
permits, rights-of-way, and easements to eliminate effects that would prevent attainment of the Riparian Management Objectives or adversely effect inland native fish. Priority for modifying existing leases, permits, rights-of-way, and easements would be based on the current and potential
adverse effects on inland native fish and the ecological value of the riparian resources affected.

LH-4 Use land acquisition, exchange, and conservation easements to meet Riparian Management Objectives
and facilitate restoration of fish stocks and other species at risk of extinction.

General Riparian Area Management

RA-1 Identify and cooperate with Federal, Tribal, State and local governments to secure instream flows
needed to maintain riparian resources, channel conditions, and aquatic habitat.

RA-2 Trees may be felled in Riparian Habitat Conservation Areas when they pose a safety risk. Keep felled
trees on site when needed to meet woody debris objectives.

RA-3 Apply herbicides, pesticides, and other toxicants, and other chemicals in a manner that does not retard
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or prevent attainment of Riparian Management Objectives and avoids adverse effects on inland native
fish.

RA-4 Prohibit storage of fuels and other toxicants within Riparian Habitat Conservation Areas. Prohibit
refueling within Riparian Habitat Conservation Areas unless there are no other alternatives. Refueling
sites within a Riparian Habitat Conservation Area must be approved by the Forest Service or Bureau
of Land Management and have an approved spill containment plan.

RA-5 Locate water drafting sites to avoid adverse effects to inland native fish and instream flows, and in a
manner that does not retard or prevent attainment of Riparian Management Objectives.

Watershed and Habitat Restoration

WR-1 Design and implement watershed restoration projects in a manner that promotes the long-term
ecological integrity of ecosystems, conserves the genetic integrity of native species, and contributes to
attainment of Riparian Management Objectives.

WR-2 Cooperate with Federal, State, local, and Tribal agencies, and private landowners to develop
watershed-based Coordinated Resource Management Plans (CRMPs) or other cooperative agreements
to meet Riparian Management Objectives.

Fisheries and Wildlife Restoration

FW-1 Design and implement fish and wildlife habitat restoration and enhancement actions in a manner that
contributes to attainment of the Riparian Management Objectives.

FW-2 Design, construct, and operate fish and wildlife interpretive and other user-enhancement facilities in a
manner that does not retard or prevent attainment of the Riparian Management Objectives or adversely
effect inland native fish. For existing fish and wildlife interpretive and other user-enhancement
facilities inside Riparian Habitat Conservation Areas, assure that Riparian Management Objectives are
met and adverse effects on inland native fish are avoided. Where Riparian Management Objectives
cannot be met or adverse effects on inland native fish avoided, relocate or close such facilities.

FW-3 Cooperate with Federal, Tribal, and State wildlife management agencies to identify and eliminate wild
ungulate impacts that prevent attainment of the Riparian Management Objectives or adversely effect
inland native fish.

FW-4 Cooperate with Federal, Tribal, and State wildlife management agencies to identify and eliminate

adverse effects on native fish associated with habitat manipulation, fish stocking, fish harvest, and
poaching.